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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,980	03/30/2004	Yoshinobu Hirokado	2257-0246PUSI	3134
2292 7590 10/18/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER HO, ALLEN C	
			ART UNIT	PAPER NUMBER
			2882	
			NOTIFICATION DATE	DELIVERY MODE
			10/18/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	Application No. 10/811,980	Applicant(s) HIROKADO, YOSHINOBU	
	Examiner Allen C. Ho	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 28 September 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3, 9, 10 and 18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3, 10 and 18 is/are allowed.
- 6) ☒ Claim(s) 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi *et al.* (U. S. Patent No. 5,955,850) in view of Kawate *et al.* (U. S. Patent No. 7,012,362 B2).

With regard to claim 9, Yamaguchi *et al.* disclosed a cold cathode light emitting device that comprises: a plurality of cathode electrodes (2, 102); a plurality of insulating layers (3, 3', 103, 103') laminated over the plurality of cathode electrodes; a plurality of gate electrodes (7) provided on the plurality of insulating layers to intersect the plurality of cathode electrodes with the plurality of insulating layers interposed therebetween for extracting electrons from the plurality of cathode electrodes; an anode electrode (9, 109) opposed to the plurality of gate electrodes for emitting light upon receipt of the electrons, with a voltage for accelerating the electrons being applied between the anode electrode and the plurality of cathode electrodes; at least one hole (20, 120) provided at each intersection of the plurality of cathode electrodes and the plurality of gate electrodes extending through the plurality of gate electrodes and the plurality of insulating layers to reach a surface of the plurality of cathode electrodes, the at least one hole having a first diameter (D1) at a position where a first (3, 103) of the plurality of insulating layers contact the plurality of cathode electrodes and a second diameter (2d<sub>1</sub>, D2) at a position of

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the plurality of gate electrodes, where the second diameter is greater than the first diameter (Figs. 3, 22).

However, Yamaguchi *et al.* failed to disclose a nanofiber-structure layer provided on the plurality of first electrodes in an opening portion corresponding to the first diameter in the at least one hole.

Kawate *et al.* disclosed a cold cathode light emitting device that comprises a nanofiber-structure layer provided on the plurality of first electrodes. Kawate *et al.* taught that nanofiber is capable of emitting a high electron current at a low electric field (column 11, lines 32-57).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a nanofiber-structure layer on the plurality of first electrodes in an opening portion corresponding to the first diameter in the at least one hole, since a person would be motivated to employ an electron emission material that is capable of emitting a high electron current at a low electric field.

Furthermore, although Yamaguchi *et al.* disclosed a thickness  $t_1$  ( $L_1$ ) of a lowermost insulating layer of the plurality of insulating layers being in contact with the plurality of cathode electrodes and a thickness  $t_2$  ( $L_2$ ) of the remainder of the plurality of insulating layers (column 7, lines 38-41), Yamaguchi *et al.* failed to disclose a  $t_1$  that is smaller than  $t_2$ . Yamaguchi *et al.* further taught designing an electric field by adjusting various parameters (column 7, line 65 - column 8, line 9).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to configure the thickness of the lowermost insulating layer such that it is

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smaller than the thickness of the remainder of the plurality of insulating layers, since a person would be motivated to design a desired electric field by adjusting various parameters.

***Allowable Subject Matter***

3. Claims 3, 10, and 18 are allowed.

***Response to Amendment***

4. Applicant's arguments filed 28 September 2007 with respect to claims 3, 9, and 10 have been fully considered. The objection of claims 3, 9, and 10 has been withdrawn.

***Response to Arguments***

5. Applicant's arguments filed 28 September 2007 have been fully considered but they are not persuasive.

With respect to the rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi *et al.* (U. S. Patent No. 5,955,850) in view of Kawate *et al.* (U. S. Patent No. 7,012,362 B2), the applicant argues that Yamaguchi *et al.* and Kawate *et al.* failed to disclose a lowermost insulating layer of the plurality of insulating layers being in contact with the plurality of cathode electrode has a thickness  $t_1$ , and the remainder of the plurality of insulating layers other than the lowermost insulating layer has a thickness  $t_2 > t_1$ . Specifically, the applicant argues that the greater thickness of the insulating layer located adjacent to the gate electrodes is used to perform the function of ensuring insulation between the gate electrodes, the cathode electrodes, and a nanofiber-structure layer. This argument is not persuasive. First of all, this

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argument is not applicable to the cold cathode light emitting device disclosed by Yamaguchi *et al.* since this argument is based on applicant's own invention. Yamaguchi *et al.* suggested that various parameters could be adjusted to design a desired electric field (column 7, line 65 - column 8, line 9). Furthermore, the rejection clearly sets forth a rationale for modifying the thicknesses. It would be within the capabilities of a person skilled in the art to adjust various parameters to design a desired electric field. Using a known technique to achieve a predictable result would have been obvious to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

Therefore, the rejection is being maintained.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen C. Ho/  
Primary Examiner  
Art Unit 2882

11 October 2007